

MSU 4.1-546
2/05/01

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Donald Penner, Christy L. Sprague and
Richard F. Burow

Group Art Unit: 1616

For : COMPOSITIONS AND METHODS FOR PROTECTING
CULTIVATED PLANTS FROM HERBICIDAL INJURY

Examiner : A. Pryor

Assistant Commissioner For Patents

Washington, D. C. 20231

AMENDMENT UNDER 37 CFR 1.111

Preliminary to the first Office Action, the
Applicants amend and remark as follows:

In the Specification

Page 1, line 15, delete "repellant" and insert
-repellent-.

Page 4, line 6, delete "repellant" and insert
-repellent-.

Page 4, line 11, delete "repellant" and insert
-repellent-.

Page 4, line 17, delete "repellant" and insert
-repellent-.

Page 5, line 25, delete "repellant" and insert
-repellent-.

Page 7, line 5, delete "repellant" and insert

-repellent-.

Page 8, line 35, delete "repellant" and insert
-repellent-.

Page 9, line 13, delete "repellant" and insert
-repellent-.

Page 10, line 12, delete "repellant" and insert
-repellent-.

Page 10, line 17, delete "repellant" and insert
-repellent-.

Page 10, line 22, delete "repellant" and insert
-repellent-.

Page 11, line 9, delete "repellant" and insert
-repellent-.

Page 11, line 14, delete "repellant" and insert
-repellent-.

Page 12, line 16, delete "repellant" and insert
-repellent-.

Page 12, line 21, delete "repellant" and insert
-repellent-.

Page 13, line 23, delete "repellant" and insert
-repellent-.

Page 13, line 30, delete "repellant" and insert
-repellent-.

Page 13, line 31, delete "repellant" and insert
-repellent-.

Page 14, line 30, delete "repellant" and insert
-repellent-.

Page 14, line 37, delete "repellant" and insert

-repellent-.

Page 16, line 2, delete "repellant" and insert
-repellent-.

Page 17, line 23, delete "repellant" and insert
-repellent-.

Page 18, line 27, delete "repellant" and insert
-repellent-.

Page 18, line 29, delete "repellant" and insert
-repellent-.

Page 20, line 4, delete "repellant" and insert
-repellent-.

Page 20, line 6, delete "repellant" and insert
-repellent-.

Page 20, line 9, delete "repellant" and insert
-repellent-.

Page 20, line 18, delete "repellant" and insert
-repellent-.

Page 20, line 35, delete "repellant" and insert
-repellent-.

Page 21, line 16, delete "repellant" and insert
-repellent-.

Page 21, line 20, delete "repellant" and insert
-repellent-.

Page 22, line 37, delete "repellant" and insert
-repellent-.

Page 24, line 28, delete "repellant" and insert
-repellent-.

Page 25, line 1, delete "repellant" and insert

-repellent-.

Page 30, line 9, delete "repellant" and insert
-repellent-.

Page 31, line 32, delete "repellant" and insert
-repellent-.

Page 33, line 29, delete "repellant" and insert
-repellent-.

Page 34, line 7, delete "repellant" and insert
-repellent-.

Page 36, line 10, delete "repellant" and insert
-repellent-.

Page 42, line 2, delete "repellant" and insert
-repellent-.

In the Claims

Cancel Claims 8-11, 19, 32-35, 45-52 and 66-70.

Replace Claims 1, 4, 12, 18, 24, 25, 28, 29,
45, 46, 56, 57, 58, 60, 61, 62 and 63 with the following
claims.

-1- (Amended)

A composition for protecting cultivated plants comprising:

(a) at least one herbicide; and

(b) repellent adjuvant selected from the group consisting of silane, silicone, silicate and mixtures thereof which are organic for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

-4- (Amended)

The composition of Claim 3 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane, 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyllpyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-

2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-
tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-
diazacyclononane, 1-(dichloroacetyl)-1-
azaspiro[4,4]nonane, and combinations thereof.

-12-(Amended)

The method of Claim 1 wherein the repellent adjuvant is an aqueous solution of sodium methyl siliconate.

-18-(Amended)

The composition of Claim 17 wherein the safener is selected from the group consisting of benoxacor, flurilazole, dichlormid and 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane.

A method for protecting crop plants without injuring crop plants, the steps comprising:

5 (a) providing a herbicidal formulation comprising at least one herbicide admixed with a repellent adjuvant selected from the group consisting of silane, silicone, siliconate and mixtures thereof which are organic wherein the repellent adjuvant modifies surface properties of the formulation thereby reducing retention of the formulation on foliage of crop plants;
10 and

(b) applying the formulation to the crop plants wherein the formulation bounces off the foliage onto the soil wherein the formulation protects the crop plants without injuring the crop plants.
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A method for inhibiting a weed without injuring turfgrass, the steps comprising:

(a) providing a liquid dispersion of a herbicidal formulation comprising at least one herbicide admixed with a repellent adjuvant which is an organosiliconate wherein the repellent adjuvant modifies surface properties of the formulation thereby reducing retention of the formulation on foliage of the turfgrass; and

(b) applying the formulation to the turfgrass wherein the formulation bounces off the foliage onto the soil wherein the formulation inhibits growth of the weed.

The method of Claim 27 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane, 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof.

The method of Claim 25 wherein the repellent adjuvant is an aqueous solution of an organosiliconate which has the formula



wherein X denotes sodium or potassium, and R is methyl, ethyl, or propyl, and the ratio of Si:X is about 1:1.

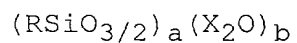
A method for applying one or more postemergence herbicides for controlling weeds to a crop plant without injuring the crop plant, the steps comprising:

5 (a) providing a composition comprising at least one herbicide admixed with a repellent adjuvant which is an organosiliconate wherein the repellent adjuvant modifies surface properties of the formulation thereby reducing retention of the formulation on foliage
10 of crop plants; and

(b) applying the formulation to the plants wherein the formulation bounces off the foliage onto the soil wherein the formulation controls the weeds without injuring the crop plant.

The method of Claim 45 wherein the repellent adjuvant is an aqueous solution of the organosiliconate which has the formula

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wherein X denotes sodium or potassium, and R is methyl, ethyl, or propyl, and the ratio of Si:X is about 1:1.

The method of Claim 55 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane, 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidiny]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinazoline, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof.

A composition for protecting cultivated plants comprising:

(a) an acetochlor herbicide;

(b) a safener selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane, 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidiny]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinoline, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof; and

(c) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

A composition for protecting cultivated plants comprising:

(a) one or more of a herbicide selected from the group consisting of nicosulfron, glyphosphate, glyphosphate, primisulfron, chlorimuron, glufosinate-ammonium salt, linuron, linuron and chlorimuron ethyl, thifensulfuron, imazethapyr, imazaquin, acetochlor, alachlor, S-ethyldipropylthiocarbonate, isoxaflutole, flufenacet, metalachlor, and combinations thereof; and

(b) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

The composition of Claim 59 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane, 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof.

-61-(Amended)

A composition for protecting cultivated plants comprising:

(a) a herbicide which is isooxaflutole;

(b) a safener which is 2,2,5-trimethyl-N-
5 dichloro-acetyloxazolidine; and

(c) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

-62-(Amended)

A composition for protecting cultivated plants comprising:

(a) a herbicide which is halosulfuron;

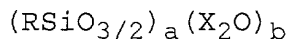
(b) a safener which is 3-dichloroacetyl-5-
5 (2-furanyl)-2,2-dimethyloxazolidine; and

(b) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

-63- (Amended)

The composition of any one of Claims 57, 58, 59, 60, 61, or 62 wherein the repellent adjuvant is an aqueous solution of the organosiliconate which has the formula

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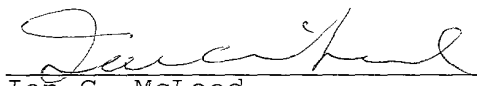
wherein X denotes sodium or potassium, and R is methyl, ethyl, or propyl, and the ratio of Si:X is about 1:1.

REMARKS

Claims 1-7, 12-18, 20-31, 36-44 and 53-65 are pending. The claims have been amended to cover "silanes, silicones and siliconates" and in particular "organosiliconates" (RSiOOX). The latter compounds are repellent adjuvants not covered by the claims of the parent application. The spelling of "repellent" in the specification has been corrected.

Favorable consideration is requested.

Respectfully,


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Versions with markings to show changes made

-1- (Amended)

A composition for protecting cultivated plants comprising:

(a) at least one herbicide; and

(b) [a] repellent adjuvant selected from the group consisting of silane, silicone, siliconate and mixtures thereof which are organic for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

-4- (Amended)

The composition of Claim 3 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane [MON 4660], 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidiny]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-

isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-
2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-
tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-
diazacyclononane, 1-(dichloroacetyl)-1-
5 azaspiro[4,4]nonane, and combinations thereof.

-12-(Amended)

The method of Claim 1 wherein the repellent
[repellant] adjuvant is [selected from the group
consisting of] an aqueous solution of sodium methyl
siliconate [and an aqueous solution of N-(2-aminoethyl)-
3-aminopropyltrimethoxysilane and
methyltrimethoxysilane].

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-18-(Amended)

The composition of Claim 17 wherein the
safener is selected from the group consisting of
benoxacor, flurilazole, dichlormid and 4-
(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane [MON
4660].

A method for protecting crop plants without injuring crop plants, the steps comprising:

(a) providing a herbicidal formulation comprising at least one herbicide admixed with a repellent adjuvant selected from the group consisting of silane, silicone, siliconate and mixtures thereof which are organic wherein the repellent [repellant] adjuvant modifies surface properties of the formulation thereby reducing retention of the formulation on foliage of crop plants; and

(b) applying the formulation to the crop plants wherein the formulation bounces off the foliage onto the soil wherein the formulation protects the crop plants without injuring the crop plants.

A method for inhibiting a weed without injuring turfgrass, the steps comprising:

(a) providing a liquid dispersion of a herbicidal formulation comprising at least one herbicide
5 admixed with a repellent adjuvant which is an
organosiliconate wherein the repellent [repellant]
adjuvant modifies surface properties of the formulation
thereby reducing retention of the formulation on foliage
of the turfgrass; and

10 (b) applying the formulation to the turfgrass
wherein the formulation bounces off the foliage onto the
soil wherein the formulation inhibits growth of the weed.

The method of Claim 27 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane [MON 4660], 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinazoline, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof.

-29-(Amended)

The method of Claim [24 or] 25 wherein the repellent [repellant] adjuvant is an aqueous solution of an organosiliconate which has the formula



wherein X denotes sodium or potassium, and R is methyl, ethyl, or propyl, and the ratio of Si:X is about 1:1.

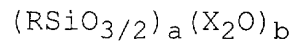
A method for applying one or more postemergence herbicides for controlling weeds to a crop plant without injuring the crop plant, the steps comprising:

5 (a) providing a composition comprising at least one herbicide admixed with a repellent adjuvant which is an organosiliconate wherein the repellent [repellant] adjuvant modifies surface properties of the formulation thereby reducing retention of the formulation on foliage of crop plants; and

10 (b) applying the formulation to the plants wherein the formulation bounces off the foliage onto the soil wherein the formulation controls the weeds without injuring the crop plant.

The method of Claim 45 wherein the
repellent [repellant] adjuvant is an aqueous solution
of the [an] organosiliconate which has the formula

5



wherein X denotes sodium or potassium, and R is methyl,
ethyl, or propyl, and the ratio of Si:X is about 1:1.

The method of Claim 55 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane [MON 4660], 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof.

A composition for protecting cultivated plants comprising:

(a) an acetochlor herbicide;

(b) a safener selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane [MON 4660], 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benzoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof; and

(c) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

A composition for protecting cultivated plants comprising:

(a) one or more of a herbicide selected from the group consisting of nicosulfron, glyphosphate [-isopropyl amine salt], glyphosphate, primisulfron, chlorimuron, glufosinate-ammonium salt, linuron, linuron and chlorimuron ethyl, thifensulfuron, imazethapyr, imazaquin, acetochlor, alachlor, S-ethyldipropylthiocarbonate, [glyphosphatetrimethylsulfonium salt,] isoxaflutole, flufenacet, metalachlor, and combinations thereof; and

(b) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

The composition of Claim 59 wherein the safener is selected from the group consisting of 4-(dichloroacetyl)-1-oxo-4-azaspiro-(4,5)-decane [MON 4660], 2,2-dichloro-N,N-di-2-propenylacetamide, 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyl-oxazolidine, 2,2,5-trimethyl-N-dichloroacetyloxazolidine, 2,2-dimethyl-5-phenyl-N-dichloroacetyl oxazolidine, N,N-diallyl-2,2-dichloroacetamide, 2,2-dimethyl-5(2-furanyl)-N-dichloroacetyl oxazolidine, 2,2-dimethyl-5(2-thienyl)-N-dichloroacetyl oxazolidine, 2,2-spirocyclohexy-N-dichloroacetyl oxazolidine, 4-(dichloroacetyl)-3,4-dihydro-3-methyl-2H-1,4-benoxazine, 3-[3-(dichloroacetyl)-2,2-dimethyl-5-oxalidinyl]pyridine, 4-(dichloroacetyl)-1-oxa-4-azaspiro-(4,5)-decane, 2,2-dichloro-1-(1,2,3,4-tetrahydro-1-methyl-2-isoquinolyl)ethanone, cis/trans-1,4-bis(dichloroacetyl)-2,5-dimethylpiperazine, N-(dichloroacetyl)-1,2,3,4-tetrahydroquinaldine, 1,5-bis(dichloroacetyl)-1,5-diazacyclononane, 1-(dichloroacetyl)-1-azaspiro[4,4]nonane, and combinations thereof.

A composition for protecting cultivated plants comprising:

(a) a herbicide which is isooxaflutole [S-ethylpropylthio-carbonate];

5 (b) a safener which is 2,2,5-trimethyl-N-dichloro-acetyloxazolidine; and

(c) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on
10 foliage of the cultivated plant is reduced.

A composition for protecting cultivated plants comprising:

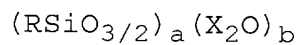
(a) a herbicide which is halosulfuron;

(b) a safener which is 3-dichloroacetyl-5-(2-furanyl)-2,2-dimethyloxazolidine; and
5

(b) a repellent adjuvant which is an organosiliconate for modifying surface properties of the composition so that retention of the composition on foliage of the cultivated plant is reduced.

The composition of any one of Claims 57, 58, 59, 60, 61, or 62 wherein the repellent [repellant] adjuvant is an aqueous solution of the [an] organosiliconate which has the formula

5



wherein X denotes sodium or potassium, and R is methyl, ethyl, or propyl, and the ratio of Si:X is about 1:1.